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POPULATION PROJECTIONS:
THE KENYAN EXPERIENCE

INTRODUCTION

The main objective of this paper is to study the population projections experience and/or situation in Kenya since 1969. In order to achieve this objective, the paper is divided into five main sections:-

(a) Part one is the introduction.
(b) Part two deals with the Geography and Climate of Kenya.
(c) Third, the demographic profile of Kenya since the first census in 1948 is reviewed.
(d) Fourth, a review of the population projections in Kenya since 1969 is made.
(e) Fifth, limitations of population projections are discussed. And finally the conclusion.

GEOGRAPHY AND CLIMATE OF KENYA

Kenya is situated across the equator, extending to latitudes 4° North and 4° South. The total area of 582,646 km^2 includes 14,789 km^2 of inland water, mainly accounted for by Lake Turkana and the North-Eastern part of Lake Victoria. Over half of Kenya, chiefly the northern and north-eastern parts of the country, is arid, while the south-eastern coastal strip and the south-western area of the country, namely the Kenya Highlands and Lake Plateau, are the main fertile and productive regions.

About 66% of Kenya has an average rainfall of under 50 cm. a year, and only 13% of the country can expect to receive consistently 60 cm. of rainfall or more a year. These better-watered areas are limited to the south-western area and the south eastern coastal belt.

Kenya is divided into 4 physical regions - The narrow coastal plain, the semi-arid region of the west and north, the highlands including the Rift Valley and lastly the plateau surrounding Lake Victoria. Of these regions the highlands and lake plateau are the most important and most densely populated.

THE DEMOGRAPHIC PROFILE OF KENYA (1948 - 1979)

The first national census in Kenya in 1948 showed a population of 5.4 million persons. By the time of the 1962 census the population had grown to 8.6 million and by the 1969 census it had reached 10.9 million. Results from the census conducted in August 1979 indicate that the population had grown to 15.8 million persons and the population is estimated to be about 20.1 million in 1985. As indicated by these figures, demographic trends over the past 33 years have resulted in an increasing rate of population growth. The growth of population is a result of the three components of population change: births, deaths, and migration. In Kenya, as in many developing countries, international migration is insignificant, hence the effect of the migration component in population change is minimal. Therefore population change in Kenya over the last three decades can be said to be a result of fertility and mortality changes

Trends in Fertility

In 195C's the Total Fertility Rate (defined as the number of live births that a woman reaching the end of her reproductive life has given birth to) was estimated at 6.5 children. By 1962 the average number had risen to 6.8. The 1969 census and the National Demographic Survey of 1977 indicated a total fertility rate of 7.6 and 8.1 respectively. The total fertility rate was estimated to be 7.9 children in 1979 which is lower than that of the 1977/78 National Demographic Survey. The 1979 estimate is conservative as it makes no allowance of the proportion of women who did not answer the fertility questions in the 1979 census. Corresponding to these high fertility rates, the birth rate (number of births per 1000 population) has remained very high. The 1969 and 1979 fertilify rates give crude birth rates of 50 and 52 per thousand respectively. Some of the factors which have contributed to the increasing fertility in Kenya are: Better nutrition, hygiene and health services and some weakening of traditional customs which acted to space births further a part such as prolonged breastfeeding, sexual abstinence following childbirth, and polygamy.

Trends in Mortality

Available evidence suggests that mortality has continued to decline sharply since 1962 in Kenya. The crude death rate (number of deaths per 1000 population) was established at between 18 and 23 per 1000 in the 1962 census, at 17 in the 1969 census and at 14 in the 1977 National Demographic Survey. Life expectancy at birth rose from an estimated 40 to 45 years in 1962 to 46.9 years for males and 51.2 years for females in 1969. Estimates made from the National Demographic Survey suggested a further rise in life expectancy at birth to 51.2 years for males and 55.8 years for females. The 1979 census indicated a life expectancy of 54.1 years for males and 56.9 years for females. The most significant improvement in mortality has been in infant mortality rates which declined from about 160 deaths per 1000 lives in the 1948-1958 period to approximately 92 in 1980.

The extensive declines in mortality in Kenya have been attributed to extensive improvement in public health measures such as vaccination programs, easier access to regular water supplies and the government efforts to improve the socio-economic well being of the average citizen.

Trends in Rates of Population Growth

The high and increasing level of fertility combined with declining mortality has resulted in an increasing rate of population growth. The average growth rate of about 2.5 per cent per year in 1948 rose to about 3.0 per cent per year in 1962 and to 3.3 per cent per year in 1969. The 1979 census registered a further rise in the rate of population growth to 3.8 per cent per annum. A population growth rate of 3.8 per cent per year means a doubling period of less than 18 years. The rapid population growth rate which has been a characteristic

of the Kenya population since 1948 has emerged as a matter of public concern because it is feared the resultant high increase in population might have a dampening effect on any development efforts. For this reason, the government always relies on demographers to provide population projections on which development plans are based.

POPULATION PROJECTIONS

The study of population growth has one specific practical application, which is to calculate population trends of the future. These calculations are called by various names - future populations, forecasts, extrapolations, estimates, or projections. They consist of extending some plausible patterns of growth from the past into the future! They may also be extended into the past. This is especially useful in reconstructing probable trends of undocumented past period and in testing the consistency of different censuses.

Of the various names which calculations of population trends of the future are called, may I define, the terms a projection and a forecast since these two terms are used interchangeably in this paper.

A projection may be defined as the exact measurement of a future condition that would exist if the rules and assumptions embodied in the projection method proved to be empirically valid in the future. Projections may assume continuation of past conditions, present conditions, or trended changes in historical conditions. They may also assume entirely new transition rates. The point is, therefore, given the projection method and the assumptions, a projection is always correct if the operations of the projection method are carried out without error. The number of possible projections for any given population is therefore infinitely large.

A forecast, on the other hand, is a projection that is also a judgement statement concerning the expected measurement of future conditions; it is a prediction. In other words, all forecasts are projections, but not all projections are forecasts.

A projection is simply a statistical extrapolation; i.e. the consequences of extending into the future the mathematical function which is thought to describe best the trend of past data. Its validity therefore, depends upon its basic premises. It shows what the expected course of events would be if the same conditions that affected the series of data in the past were to prevail in the future.

Uses of Population Projections

Demographers produce projections on the basis of statistical observations concerning levels and trends in the basic demographic determinants of population change, in so far as these parameters are known. The main contribution of demographers in development planning has been to prepare current estimates of demographic conditions. The projections are usually described as "if, then"

projections: "If such and such assumptions about fertility, mortality, and migration, then thefuture population will be so and so". Only the computations are "certified" not the results. Development planners then make a single choice from among the alternatives presented.

Development plans guide the commitment of economic and organizational resources in the present for the purpose of production in future. Urban planning, educational planning, health planning, and many other kinds of planning are undertaken to determine whether immediate expenditure will provide facilities for production and services that will be justified by demands of the population in the future.

It hardly seems necessary to stress that the same principles that require investment planners to look beyond the period of immediate commitment require development planners to do the same in relation to population. Demographic information and population projections of various kinds covering some specific time period are essential if quantitative planning is therefore to take place.

Population Projections in Kenya

As mentioned above, development plans which guide the commitment of economic and organizational resources in the present for the purposes of projections. To project a population one begins with information on size and age-sex composition at some time in the past. Then using assumptions about the age specific fertility and mortality rates, the population may be projected easily to any time in the future.

The data base for the projections to be discussed in this paper accrue from the 1969 and 1979 censuses. Details of the methods of projections will not be discussed. The assumptions on which the projections are based will however be mentioned briefly. First, the projections with the 1969 census data as the base data are discussed and then the projections with the 1979 census data as the base population are also discussed.

Population Projections with 1969 census data as the base data

The 1970 population by sex and age group which forms the starting point of the projections was based on the population enumerated in the census held in August, 1969.

Tables 1, 2, 3, 4 and 5 show Kenya's total projected population; projected primary school population (Ages 6-12); projected secondary school population (Ages 13-16); projected labour force population, (Ages 15-59) and projected labour force population, (Ages 15-64) from 1970 to the year 2000 under four various fertility and mortality assumptions. The four series of projections, identified subsequently as A, B, C, and D are based on the following assumptions:-

(1) No change from 1969 fertility upto 1975

(2) A steady decline in mortality, leading to life expectancy at birth by the year 2000 of 60 years for both sexes.

(3) The fertility assumption for each series are as follows:

Series A - No change in age specific fertility

Series B - The total fertility rate falling to 4 by the year 2000

Series C - The total fertility rate falling to 3 by the year 2000

Series D - The total fertility rate falling to 2 by the year 2000

The total population under the four series: A, B, C, and D is expected to be about 34, 286; 28, 131; 26, 164; and 24, 249 thousands by the year 2000 respectively.

The consequences of the growth of population as evidenced from the tables 2, 3, 4 and 5 would be the rising size of the school age population and the rising size of the labour force. The growth in population also has other social and economic consequences such as growing urbanization, a rising demand for housing, decreasing per capita availability of goods agricultural land etc.

For many purposes information on the size and characteristics of the total population of a nation is not sufficient. Population data are needed for political subdivisions, development planning and for other classifications of areas in which people live.

Various demographic studies in Kenya have indicated that population distribution varies from region to region. Climatically and ecologically favourable regions are more densely populated than the arid and semi-arid areas. It is against this background that projections have been made for each district and province for the period 1970 to 1980.

However, for the purposes of the provincial and district projections only series A and B of the four series mentioned in making national projections were used. Briefly, the assumptions underlying these two series are as follows:

(i) No change from 1969 fertility upto 1975.

(ii) A steady decline in mortality, leading to a rise in life expectancy at birth, for both sexes, from 49 years in 1969to 53 years in 1980.

(iii) (a) Series A - No change in age specific fertility rates through 1980.

(b) Series B - Decline in age specific fertility rate from 7.6 in 1969 to 6.9 in 1980.

Table 6 and 7 show projected population by province and district based on the two series; A and B respecively for the period 1970 to 1980.

TABLE 1 TOTAL PROJECTED POPULATION, 1970-2000

	Series A	Series B	Series C	Series D
1970	11,247			
1971	11,694			
1972	12,091	-----	As in Series A -----	
1973	12,504			
1974	12,935			
1975	13,413			
1976	13,853	13,842	13,839	13,833
1977	14,348	14,314	14,302	14,288
1978	14,875	14,806	14,782	14,757
1979	15,427	15,313	15,270	15,229
1980	16,053	15,877	15,790	15,752
1985	19,310	18,634	18,387	18,186
1990	23,302	21,617	21,047	20,521
1995	28,213	24,795	23,698	22,626
2000	34,286	28,131	26,164	24,249

PROJECTED PRIMARY SCHOOL POPULATION, AGES 6-12, 1970-2000

Table 2

	Series A		Series B		Series C		Series D	
	No '000	Rate %	No '000	Rate %	No '000	Rate %	No '000	Rate %
1970	2235		2235		2235		2235	
		3.49		3.49		3.49		3.49
1975	2652		2652		2652		2652	
		4.05		4.05		4.05		4.05
1980	3235		3235		3235		3235	
		4.02		3.46		3.12		2.94
1985	3939		3835		3773		3450	
		4.01		2.37		1.87		1.26
1990	4795		4312		4140		3997	
		3.98		1.87		1.27		0.35
1995	5830		4754		4411		4059	
		3.92		1.55		0.51		0.76
2000	7067		5134		4529		3908	

Source: CBS (1971)

Table 3

PROJECTED SECONDARY SCHOOL POPULATION, AGES 13-16, 1970-2000

	Series A		Series B		Series C		Series D	
	No '000	Rate %	No '000	Rate %	No '000	Rate %	No '000	Rate %
1970	1040		1040		1040		1040	
		3.39		3.39		3.39		3.39
1975	1228		1228		1228		1228	
		3.52		3.52		3.52		3.52
1980	1460		1460		1460		1460	
		4.17		4.17		4.17		4.17
1985	1792		1792		1792		1792	
		4.03		3.60		3.23		3.12
1990	2183		2132		2100		2094	
		4.01		2.46		1.99		1.46
1995	2658		2408		2317		2251	
		3.85		2.02		1.40		0.44
2000	3210		2661		2482		2300	

Source: CBS (1971)

Table 4

PROJECTED LABOUR FORCE, 1970-2000
(Population Aged 15-59)

	Series A		Series B		Series C		Series D	
	No	Rate	No	Rate	No	Rate	No	Rate
1970	3818							
		3.41)						
1975	4515	)						
		3.48)	------ As in Series A ----------					
1980	5357	)						
		3.57)						
1985	6376	)						
		3.70)						
199(	7667	)						
		3.85)		3.59		3.48		3.39
1995	9258		9144		9090		9060	
		3.91		3.33		3.14		2.99
2000	11215		10771		10611		10473	

Source: CBS (1971)

Table 5

PROJECTED LABOUR FORCE, 1970-2000
(Population Aged 15-64)

	Series A		Series B		Series C		Series D	
	No	Rate	No	Rate	No	Rate	No	Rate
	'000	%	'000	%	'000	%	'000	%
1970								
1975	4652	3.42)						
		3.47)						
1980	5517	)	------- As in series A ----------					
		3.55)						
1985	6568	)						
1990	7900	3.76)						
		)						
1995	9537	3.84	9423	3.59	9369	3.47	9339	3.40
2000	11553	3.91	11111	3.35	10950	3.17	10813	2.98

Source: CBS (1971)

PROJECTED POPULATION BY DISTRICT, 1970 - 1980

Based on "Series A"

Table 6

Province/District	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Total	11,247	11,694	12,001	12,504	12,935	13,414	13,853	14,348	14,875	15,427	16,053
Nairobi	534	566	597	629	663	700	736	776	818	863	913
Central Province	1,719	1,783	1,840	1,899	1,961	2,029	2,091	2,162	2,237	2,315	2,404
Kiambu	478	498	517	535	554	576	593	615	636	659	683
Kirinyaga	225	233	239	245	252	261	269	277	287	296	309
Murang'a	454	470	483	498	514	530	547	565	585	606	630
Nyandarua	189	196	203	209	215	222	227	234	240	245	251
Nyeri	373	386	398	411	425	440	454	471	489	509	530
Coast Province	970	1,009	1,044	1,079	1,117	1,158	1,196	1,239	1,285	1,333	1,387
Kilifi	315	326	335	345	355	366	377	388	400	413	427
Kwale	212	219	226	233	240	248	255	263	272	280	291
Lamu	22	22	23	22	22	21	21	21	20	20	19
Mombasa	257	272	286	301	317	334	351	371	391	413	436
Taita	113	117	119	123	126	129	133	136	140	144	148
Tana River	52	53	54	56	57	58	60	61	62	64	66
Eastern Province	1,953	2,023	2,083	2,146	2,211	2,284	2,349	2,424	2,503	2,585	2,680
Embu	185	193	201	209	218	227	236	246	256	267	280
Isiolo	30	31	31	32	32	32	33	33	33	34	34
Kitui	350	361	370	379	389	400	410	421	432	445	459
Machakos	724	750	772	795	819	845	869	897	926	956	991
Marsabit	52	53	53	54	54	55	55	55	56	56	57
Meru	612	635	656	677	700	724	747	772	799	828	860
North-Eastern Province	247	252	255	258	261	264	266	269	272	275	279
Garissa	65	66	67	68	68	69	70	71	71	72	73
Mandera	96	97	98	99	100	101	102	103	103	105	106
Wajir	87	89	90	91	92	93	94	95	97	98	99

Table 6 (cont.)

Province District	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Nyanza Provice	2,187	2,281	2,365	2,452	2,544	2,645	2,740	2,845	2,958	3,076	3,210
Kisii	695	723	748	775	802	833	861	893	927	962	1,003
Kisumu	414	433	450	469	487	508	528	550	573	598	626
Siaya	389	405	420	433	449	466	481	498	515	533	554
South Nyanza	689	720	748	777	807	841	872	907	944	983	1,027
Rift Valley Province	2,266	2,349	2,423	2,499	2,578	2,666	2,746	2,836	2,933	3,033	3,148
Baringo	162	165	166	167	168	170	170	171	172	173	174
Elgeyo Marakwet	162	167	171	175	179	183	187	192	197	202	208
Kajiado	88	91	94	97	100	104	106	110	114	118	122
Kericho	499	525	549	573	600	629	656	687	719	753	792
Laikipia	67	68	69	69	70	71	73	73	74	74	76
Nakuru	299	311	323	334	346	360	372	387	401	417	435
Nandi	214	222	229	237	244	253	261	270	280	289	300
Narok	126	129	132	134	137	141	143	146	148	151	155
Samburu	71	73	76	78	79	82	84	86	89	92	95
Trans Nzoia	130	137	143	151	158	166	173	181	190	200	211
Turkana	164	166	167	167	167	167	167	166	166	164	164
Uasin Gishu	199	209	218	228	237	249	259	270	283	296	311
West Pokot	84	86	87	89	91	93	94	96	98	100	103
Western Province	1,371	1,411	1,485	1,542	1,601	1,667	1,728	1,797	1,870	1,947	2,034
Bungoma	360	378	395	413	432	451	470	492	514	538	564
Busia	203	210	217	224	230	238	244	252	259	268	277
Kakamega	807	842	874	906	941	979	1,014	1,054	1,096	1,141	1,191

Source: CBS (1972)

PROJECTED POPULATION BY DISTRICT 1976-1980

Based on "Series B"

Table 7

Province/District	1976	1977	1978	1979	1980
Total	13,842	14,314	14,806	15,313	15,877
Nairobi	735	774	814	857	903
Central Province	2,090	2,157	2,226	2,298	2,377
Kiambu	594	613	633	654	676
Kirinyaga	268	277	285	295	305
Murang'a	546	563	582	601	623
Nyandarua	227	233	239	243	248
Nyeri	455	471	487	506	525
Coast Province	1,195	1,236	1,279	1,323	1,372
Kilifi	376	387	399	410	423
Kwala	255	262	270	278	287
Lamu	21	21	20	20	20
Mombasa	351	370	388	409	432
Taita	133	136	140	143	147
Tana River	59	61	62	64	65
Eastern Province	2,348	2,418	2,491	2,566	2,650
Embu	236	245	255	265	277
Isiolo	33	33	33	34	34
Kitui	409	420	430	441	453
Machakos	869	895	921	949	980
Marsabit	55	55	56	56	56
Meru	746	770	796	822	850
North-Eastern Province	266	268	271	273	276
Garissa	70	70	71	72	72
Mandera	102	103	103	104	105
Wajir	94	95	96	97	98
Nyanza Province	2,737	2,839	2,944	3,053	3,175
Kisii	861	891	923	956	992
Kisumu	528	549	571	594	619
Siaya	480	497	512	530	548
South Nyanza	871	905	940	976	1,016

Table 7 (Cont.)

Province/District	1976	1977	1978	1979	1980
Rift Valley Province	2,744	2,830	2,919	3,011	3,113
Baringo	170	171	171	172	172
Elgeyo Marakwet	187	192	195	200	205
Kajiado	106	110	113	117	121
Kericho	656	685	716	748	783
Laikipia	72	73	74	74	74
Nakuru	372	386	399	414	430
Nandi	261	269	278	287	297
Narok	142	145	147	150	154
Samburu	84	86	89	91	94
Trans Nzoia	173	181	189	199	208
Turkana	166	166	165	163	162
Uasin Gishu	259	270	282	294	307
West Pokot	94	96	98	100	102
Western Province	1,727	1,793	[illegible]	1,933	2,011
Bungoma	470	490	512	534	558
Busia	244	251	258	266	274
Kakamega	1,013	1,052	1,091	1,132	1,178

Source: CBS (1972)

Population Projections Using the Population Enumerated in the Census Held In August, 1979

The 1980 population by sex and age group which forms the starting point of the projections was based on the population enumerated in the census held in August, 1979. Projections for the years 1980 to 2000 have been made at the National level and at the District and Provincial levels.

National Level Projections for 1980 to 2000

Three sets of projections of the population of Kenya, by sex and age, for the years 1980 to 2000 have been made on the basis of the following assumptions.

A. that both fertility and mortality decline from the rates estimated for 1980 (Total fertility rate declines from 7.887 in 1980 to 5.5 at the end of the century; life expectancy at birth increases from 54.1 years for males and 56.9 years for females in 1980 to 58.8 years and 61.5 years for males and females respectively in the year 2000).

B. that fertility remains constant, but mortality continues to decline.

C. That both fertility and mortality remain constant.

The population totals for Kenya obtained from these projections are shown in Table 8. The table shows that whatever assumption is used, the population will pass 20 million this year (1985) and that it will pass 30 million by 1995-1996; and even the projection assuming declining fertility envisages a doubling of the population between 1980 and end of the century.

Table 9 shows projections for numbers of children of primary school age (6 to 12 years) for 1980 to 2000. Whatever the basis of assumptions, the school age population is expected to double between 1980 and the year 2000.

This increase in number of primary school children will need more school places, more teachers and many other social amenities.

Tables 10 shows projections for numbers of males 15 to 59 years for 1980 to year 2000. This can be interpretated as the labour force though it excludes the women population. As in the primary school age projections, the numbers of males in the age group 15 to 59 is expected to double between 1980 and the year 2000 whatever assumptions underly the projections.

This large number of people will need more jobs. In order for the government to create demand for this large labour force supply, the government will be expected to create more industries, new cash crop schemes, new government activity as well as the ability of the land to absorb more subsistence farmers.

Various other projections at national level in Kenya have been calculated. It is however not the intention of this paper to discuss in detail all that has been done.

Provincial and District Level Projections for 1980 to 2000

Unlike the National Projections, the Provincial and District level projections are available only for the period from 1980 to 2000. National projected totals assuming no change in mortality and no change in fertility were used as the base population of each year. No Provincial and District level projections were made using either assumption A or B due to complications involved in estimating the differential decline in mortality and/or fertility among the provinces and districts within provinces.

For example, consider the problem associated with using assumption A (decline in fertility). A decline in fertility would not happen simultaneously throughout the country. Any realistic provincial/district projections would therefore envisage more rapid fertility declines in some areas than in others, but introduces too much speculation as to where and when more or less decline would occur. If the assumptions in projection B do in fact occur during this ten-year period (mortality declines and fertility remains constant), the numbers given are UNDER-estimates, whereas if the assumptions in projection A happen (a decline in both mortality and fertility) the numbers OVER-estimates.

Two important considerations were used when calculating the provincial and district projections.

1. that the district totals sum to the provincial totals and the provincial totals sum to the national totals for each year, age and sex group;

2. that the projections look plausible given what is known about the growth rates in the various regions of Kenya.

To achieve the first requirement, calculations were done down to single person totals, instead of rounding each age-sex group to hundreds of people. However, it must be remembered that the numbers given, although they are the best estimates available, are still, in fact, ONLY ESTIMATES.

The projections for, first, the provinces and then districts within each province were done by what is called the "ratio method." The use of this method also catered for another important consideration for projections are based on changes during the ten years between 1969 and 1979, they incorporated internal migration patterns which is significant in Kenya unlike international migration. The net changes during this time period, a result of the natural growth rates and migration rates, are projected into the future.

Table 11 shows population projection totals by District and Province for 1980, 1985 and 1990 using the assumption of constant fertility and mortality over the decade. In all provinces and districts the population is exprected to grow by 50% between 1980 and 1990. This large increase has many socio-economic implications as mentioned in the projections based on the 1969 census data.

PROJECTED POPULATION TOTALS FOR KENYA 1980-2000
(Rounded to Thousands)

Table 8

Calendar Year	Assumptions		
	Declining Fertility Declining Mortality	Constant Fertility Declining Fertility	Constant Fertility Constant Mortality
1980	16,667	16,667	16,667
1981	17,342	17,342	17,342
1982	18,035	18,047	18,044
1983	18,748	18,784	18,775
1984	19,482	19,556	19,586
1985	20,241	20,365	20,333
1986	21,081	21,212	21,163
1987	21,826	22,100	22,030
1988	22,657	23,032	22,936
1989	23,513	24,009	23,883
1990	24,397	25,034	24,872
1991	25,308	26,109	25,905
1992	26,247	27,236	26,985
1993	27,214	28,418	28,113
1994	28,211	29,657	29,292
1995	29,237	30,966	30,622
1996	30,292	32,343	31,806
1997	31,378	33,738	33,144
1998	32,487		34,538
1999	33,626	36,782	35,991
2000	34,792	38,409	

Source: Central Bureau of Statistics (CBS)
Ministry of Economic Planning and Development, Nairobi, Kenya.
(March, 1983)

NUMBER OF CHILDREN OF PRIMARY SCHOOL AGE (6 TO 12 YEARS)
FOR KENYA 1980 TO 2000
(Rounded to Thousands)

Table 9

Calendar Year	Assumptions		
	Declining Fertility Declining Mortality	Constant Fertility Declining Mortality	Constant Fertility Constant Mortality
1980	3,607	3,607	3,607
1981	3,765	3,765	3,765
1982	3,927	3,927	3,926
1983	4,090	4,089	4,089
1984	4,251	4,248	4,247
1985	4,391	4,386	4,386
1986	4,565	4,557	4,554
1987	4,736	4,735	4,728
1988	4,907	4,921	4,908
1989	5,077	5,117	5,096
1990	5,250	5,327	5,296
1991	5,418	5,545	5,500
1992	5,587	5,776	5,716
1993	5,760	6,023	5,945
1994	5,941	6,293	6,193
1995	6,148	6,603	6,478
1996	6,336	6,911	6,760
1977	6,532	7,236	7,056
1988	6,736	7,578	7,367
1999	6,946	7,936	7,693
2000	7,159	8,307	8,029

Source: CBS (1983)

THE NUMBER OF MALES AGED 15 TO 59 FOR KENYA

1980 to 2000

(Rounded to thousands)

Table 10

Calendar Year	Assumptions		
	Declining Fertility Declining Mortality	Constant Fertility Declining Mortality	Constant Fertility Constant Mortality
1980	3,674	3,674	3,674
1981	3,828	3,828	3,828
1982	3,990	3,990	3,990
1983	4,162	4,162	4,161
1984	4,342	4,342	4,341
1985	4,532	4,532	4,529
1986	4,728	4,728	4,724
1987	4,933	4,933	4,928
1988	5,149	5,149	5,141
1989	5,374	5,374	5,365
1990	5,611	5,611	5,599
1991	5,858	5,858	5,843
1992	6,116	6,116	6,097
1993	6,384	6,384	6,361
1994	6,659	6,659	6,630
1995	6,930	6,930	6,896
1996	7,226	7,226	7,185
1997	7,530	7,530	7,485
1998	7,842	7,859	7,798
1999	8,164	8,198	8,124
2000	8,495	8,553	8,465

Source: Central Bureau of Statistics (CBS) (1983).

Table 11

ESTIMATED TOTAL POPULATION BY DISTRICT AND PROVINCE FOR 1980, 1985 & 1990 USING THE ASSUMPTION OF CONSTANT FERTILITY AND MORTALITY OVER THE DECADE

Province/District		Total Population 1980	1985	1990	Estimated Annual Net Growth Rate 1980 - 1990
NAIROBI	Total	897	1,162	1,505	517
CENTRAL	Total	2,511	3,041	3,692	385
Kiambu		736	898	1,098	460
Kirinyaga		311	373	448	865
Murang'a		695	850	1,042	405
Nyandraua		249	297	355	355
Nyeri		520	623	749	365
COAST	Total	1,440	1,756	2,150	401
Kilifi		462	561	684	392
Kwale		309	376	458	494
Lamu		46	59	77	515
Mombasa		365	442	537	386
Taita-Taveta		158	189	228	367
Tana River		100	129	166	507
EASTERN	Total	2,917	3,565	4,368	404
Embu		283	348	430	418
Isiolo		47	57	70	358
Kitui		497	599	724	376
Machakos		1,097	1,346	1,654	411
Marsabit		104	135	175	520
Meru		889	1,080	1,315	301
NORTH EASTERN	Total	404	509	640	460
Garissa		141	188	250	573
Mandera		112	128	144	251
Wajir		151	193	246	488
NYANZA	Total	3,058	3,633	4,322	346
Kisii		1,007	1,206	1,447	363
Kisumu		557	656	773	328
Siaya		549	651	773	347
South Nyanza		945	1,120	1,329	341

Table 11 (cont.)

Province/District		Total Population			Estimated Annual Net Growth Rate 1980 - 1990
		1980	1985	1990	
RIFT VALLEY	Total	3,481	4,314	5,356	431
Baringo		217	258	307	347
Elgeyo Marakwet		155	164	169	
Kajiado		161	208	267	
Kericho		677	816	984	
Laikipia		147	194	256	
Nakuru		567	734	952	
Nandi		321	396	488	
Narok		227	291	372	
Samburu		81	92	104	
Trans-Nzota		383	376	499	
Turkana		148	150	145	
Wasin Gishu		324	409	516	
West Pokot		173	226	297	
WESTERN	Total	1,960	2,855	2,837	
Bungoma		540	658	804	
Busia		320	391	479	
Kakamega		1,100	1,306	1,554	
KENYA	Grand Total				

Source: CBS (1983).

LIMITS OF POPULATION PROJECTIONS

The projections discussed above are made under various mortality and fertility assumption over some time period. Available evidence has indicated that the mortality assumptions underlined might not be tenable over a long period. It is therefore necessary to make projections over a short time interval of say one year and the projections should be revised from time to time. To do this, there should be reliable vital statistics from which the mortality and fertility levels have to be estimated. Since the system of civil registration in the country is not good enough (except in the Civil Registration Project Areas) this cannot be done. Therefore all our population projections have to be done after a national census, which provides the base data.

Further, future population depends on many other factors; such as social, economic and technological, other than demographic factors (birth, deaths and migration) mentioned above in making projections for Kenya. These social. economic and technological factors cannot be taken into account in making population projections. Therefore, how likely the future population totals will be near those projected by various variants or will fall within the wide range between the decline and growth variants is a question which demographers need to answer. A precise answer to this question cannot however be given since the problem is not probabilistic in nature.

For the purpose of this paper, I have decided to compare population of Kenya as enumerated in 1979 and the 1979 population projections based on the 1969 census population; under one various fertility and mortality assumptions.

The projections under series A, B, C and D are 15,437, 15,313, 15,271 and 15,229 millions respectively. The 1979 census gave the population as 15.8 million persons.

A study of the two sets of figures shows that the actural population in Kenya is higher than the projected population under all the four series. But the projection under series A (no change in age specific fertility) is more closer to the actual population as given by the census.

Further, we realise that the per cent difference of the 1979 enumerated population and 1979 projected population under the four series is not much. Therefore the estimates can be said to be good indicators of what the 1979 population was expected to be. For the projections with the 1980 data as derived from 1979 census data, nothing can yet be said till after the 1989 census is carried out.

CONCLUSION

Magnitudes of the problems of the rapid population growth rate in Kenya (increase in population size and its various functional groups; school age population; labour force population etc.) are reflected in the projections. It is for this reason that the projections have and will continue to provide a useful tool

of estimating the magnitude of resources that will be needed in the short and in the long run. The projections have greatly assisted in labour force planning, health planning, educational planning and planning in many other sectors.

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